TECHNICAL REVIEW AND EVALUATION
FOR
YUMA COGENERATION ASSOCIATES
AIR QUALITY PERMIT NO. 1000103

I. COMPANY INFORMATION

Yuma Cogeneration Associates (YCA) owns and operates a 55 MW (nominal) combined cycle gas turbine cogeneration facility in Yuma, AZ. The facility is located on the north west end of N. 27th Drive, Yuma, in the Mohave-Yuma Intrastate Air Quality Control Region. The facility began operation in March, 1994. The facility was approved as a Minor Source for the purposes of the ADEQ's Installation Permit regulations. A Class C Installation permit was issued, which has been amended several times through November 1, 1993. Under the new Unitary Permit Regulations, YCA is considered a major source for emissions of nitrogen oxide and carbon monoxide.

A. Company Information

Facility Name: Yuma Cogeneration Associates
Mailing Address: 280 North 27th Drive, Yuma, AZ 85364
Responsible Official: Thomas R. Mason, President, CalEnergy Operating Company

B. Attainment Classification

This source is located in a non-attainment area for PM_{10}.

II. PROCESS DESCRIPTION

YCA's operations consist of generating electricity for sale to San Diego Gas & Electric. The maximum process rates and operating hours of the significant points of emissions at YCA are summarized in Table 1.

Table 1
Maximum Process Rates

Unit	Capacity
GE Frame 6 gas turbine	36.7 MW
Condensing steam turbine generator	18.3 MW
Duct burner	45 MMBtu/hr
Standby boiler	20 MMBtu/hr
Fuel Oil storage tank	530,000 gallons

The General Electric Frame 6 turbine is fired by natural gas and operates 24 hours a day, 7 days a

week, up to 50 weeks a year. A Number 2 fuel oil system is available to fuel the turbine in the unlikely event of a curtailment of the natural gas supply. In 1994, fuel oil was burned for approximately 180 turbine hours to satisfy manufacturer's guarantee test requirements. A Heat Recovery Steam Generator (HRSG) uses waste heat from the gas turbine exhaust to generate high, intermediate, and low pressure steam. A majority of the steam produced in the HRSG is utilized in a turbine/generator set that generates additional electricity. The remaining steam supply provides steam injection for the gas turbine as well as process and chilling steam for the neighboring industrial facility. A gas fired duct burner is operated as a supplement to the gas turbine exhaust when additional steam is required from the HRSG. One 20 million Btu/hour gas fired standby boiler is used to generate low pressure steam for the industrial customer in case of the gas turbine shut down. The gas turbine and duct burner emissions and combustion products are exhausted into the atmosphere through a 85 foot high stack. A cooling tower is used to complete the steam generator/condenser closed cycle by rejecting waste heat from the steam condenser to the atmosphere.

III. EMISSIONS

The current installation permit, #95012, has several hours limitations based on the firing of natural gas or fuel oil in the turbine, and the hours of operation of the boilers, standby generator and duct burner. However, YCA never purchased the second boiler or the standby generator, so the hours limits associated with these pieces of equipment have been removed. In addition, the hours of operation of the turbine while firing natural gas or fuel oil have been removed, to increase the operational flexibility for the source. The source must track emissions of NO_x rather than hours. This is accomplished through the continuous emission monitoring of the stack emissions from the turbine (which also includes the emissions from the dust burner). The following calculations represent the equipment and fuel burning scenarios that will be permitted under the Title V permit.

The source may operate in any scenario that is desired, so long as the two limitations for NO_x are met: (1) no more than 25 ppm from the stack (excepting startup); (2) no more than 245 tons per year from the facility. The hours of operation and the fuel burned can be chosen by the source so long as these two conditions are met.

A. GE Frame 6 turbine

The gas turbine has a capacity of 36.7 MW and is primarily fired by natural gas. Number 2 fuel oil is available in the event of a curtailment of natural gas supply.

Emissions while firing natural gas

The following potential to emit calculations for the gas turbine while firing natural gas are based on guaranteed performance emissions provided to YCA by General Electric and submitted to ADEQ in 1991.

NO_x: 25 ppm at 15% O2 = 48 lb/hr (worst case from performance testing)
(48 lb/hr)(8760 hours/year)(ton/2000 lb) = 210.2 tpy

CO: (43 lb/hr)(8760 hours/year)(ton/2000 lb) = 188.3 tpy

PM: (3.05 lb/hr)(8760 hours/year)(ton/2000 lb) = 13.4 tpy

SOx: (0.5 lb/hr)(8760 hr/yr)(ton/2000 lbs.) = 2.2 tpy

VOC: (5 lb/hr)(8760 hours/year)(ton/2000 lb) = 21.9 tpy

Emissions while firing fuel oil

The following emissions calculations are based on guaranteed performance emissions provided to YCA by General Electric and submitted to ADEQ in 1991.

NO_x: 42 ppm at 15% O2 = 83 lb/hr
(83 lb/hr)(8760 hours/year)(ton/2000 lb) = 363.5 tpy

CO: (11 lb/hr)(8760 hours/year)(ton/2000 lb) = 48.2 tpy

PM: (17.0 lb/hr)(8760 hours/year)(ton/2000 lb) = 74.5 tpy

SOx: (25 lb/hr)(8760 hr/yr)(ton/2000 lbs.) 109.5 tpy

VOC: (5 lb/hr)(8760 hours/year)(ton/2000 lb) = 21.9 tpy

Fuel oil is only burned in the event of a natural gas curtailment. In 1994, fuel oil was only burned 180 turbine hours in order to satisfy the manufacturer's test requirements.

B. Duct Burner

The following emissions calculations were performed using emission factors from the 1/95 edition of AP-42, Section 1.4-1, Natural Gas Combustion for small industrial boilers between 10 and 100 MMBtu/hr. The following calculations are based on the duct burner operating 8760 hours/year. It is assumed that the higher heating value of natural gas is 1000 Btu/scf.

NO_x: (45 MMBtu/hr)(140 lb/10^6 scf)(scf/1000 Btu)(8760 hr/yr)(ton/2000 lb)= 27.6 tpy

CO: (45 MMBtu/hr)(35 lb/10^6 scf)(scf/1000 Btu)(8760 hr/yr)(ton/2000 lb) = 6.9 tpy

PM: (45 MMBtu/hr)(13.7 lb/10^6 scf)(scf/1000 Btu)(8760 hr/yr)(ton/2000 lb) = 2.7 tpy

SO2: (45 MMBtu/hr)(0.6 lb/10^6 scf)(scf/1000 Btu)(8760 hr/yr)(ton/2000 lb) = 0.12 tpy

*Total PM is the sum of filterable PM and condensable PM.

C. Heat Recovery Steam Generator (HRSG)

The HRSG is fired by the exhaust heat of the gas turbine. Because it is not directly fired by fossil fuel, there are no applicable requirements or emissions calculations.

D. Steam turbine generator

The steam turbine generator is driven by the steam generated from the HRSG. It also is not directly fired by fossil fuel, therefore; there are no applicable requirements or emissions calculations.

E. Stand-by boiler

The following emissions calculations were performed using emission factors from the 1/95 edition of AP-42, Section 1.4, Natural Gas Combustion for small industrial boilers between 10 and 100 MMBtu/hr.

Stand-by boilers at 8760 hours/year

NO_x: (20 MMBtu/hr)(140 lb/10^6 scf)(scf/1000 Btu)(8760 hr/yr)(ton/2000 lb)= 12.3 tpy

CO: (20 MMBtu/hr)(35 lb/10^6 scf)(scf/1000 Btu)(8760 hr/yr)(ton/2000 lb) = 3.7 tpy

PM: (20 MMBtu/hr)(13.7* lb/10^6 scf)(scf/1000 Btu)(8760 hr/yr)(ton/2000 lb) = 1.2 tpy

SO2: (20 MMBtu/hr)(0.6 lb/10^6 scf)(scf/1000 Btu)(8760 hr/yr)(ton/2000 lb) = 0.05 tpy

*Total PM is the sum of filterable PM and condensable PM.

F. Fuel Oil Storage Tank

True vapor pressure

The maximum monthly average temperature in Yuma, Arizona is approximately 87^0 Fahrenheit. From the 1/95 edition of AP-42, Table 7.1-2, at 90^0 F the true vapor pressure for Number 2 fuel oil is 0.016 psi.

(0.016 psi)(6.90 kPa/psi) = 0.11 kPa

IV. COMPLIANCE HISTORY

A. Inspections

Inspections are being regularly conducted on this source to ensure compliance with the permit conditions. Table 4 summarizes some of the recent inspections that have been conducted on the source and the results of the inspections.

Table 4
Inspection Results

Inspection Date	Reason for Inspection	Results
11/18/97	Relative Accuracy Test Audit (RATA)	In Compliance
7/21/97	Periodic	In Compliance
7/26/95	Relative Accuracy Test Audit (RATA)	In Compliance
2/1/95	Periodic	In Compliance
8/9/94	Follow-up	In Compliance
8/4/94	CEM certification	In Compliance
3/22/94	Compliance	In Compliance

B. Excess Emissions

Episodes of excess emissions have been reported to ADEQ on a quarterly basis. A minimum of two hours is required before the exhaust heat from the gas turbine can generate sufficient steam in the HRSG to provide for massive steam injection. As a result, excess emissions occur during this two hour (minimum) period until the manufacturer required steam temperature and pressure conditions are reached and steam injection is placed in service. However, these emissions occur during startup and not considered a violation of the applicable emission limit.

C. Testing

The results of the previous two compliance tests have been summarized in Table 5. Results from the latest test show that the unit is in compliance with the applicable standards.

Table 5
Test History

Date of Test	Equipment Tested	Pollutants Tested	Results
12/3/96	Gas turbine	NO_x	Pass
7/6/94	Gas turbine	NO_x	Incomplete

D. Compliance Certifications

YCA has stated in Appendix G of the permit application that it operates all emission units in compliance with applicable requirements and will continue to comply with all applicable requirements under the existing operating permits. After the issuance of this Part 70 permit, the Permittee will be required to submit compliance certifications every six months as indicated in Section VII of Attachment "A" of the permit.

V. APPLICABLE REGULATIONS

The Permittee has identified the applicable regulations that apply to each unit in its permit application. Table 6 summarizes the findings of the Department with respect to applicability or non-applicability of applicable regulations that apply to each unit. Installation permit and other previous permit conditions are discussed under Section VI of this technical review document.

Table 6
Applicable Regulations

Unit ID	Start-up date	Control Equipment	Applicable Regulations	Verification
GE Frame 6 gas turbine 463.4 GJ/hr	3/10/94	Massive Steam Injection (MSI)	NSPS Subpart GG 40 CFR 60.332(a)(1) 40 CFR 60.332(b) 40 CFR 60.333(b) 40 CFR 60.334(a) 40 CFR 60.334(b)(2) 40 CFR 60.334(c)(2) 40 CFR 60.334(c)(4) 40 CFR 60.335(a) 40 CFR 60.335(c)(1) 40 CFR 60.335(c)(2) 40 CFR 60.335(d) 40 CFR 60.335(e) 40 CFR 60.335(f)(1)	The unit commenced construction after October 3, 1977 and is greater than 10.7 GJ/hr capacity. There are standards for NOx and SO_2.
Duct Burner 45 MMBtu/hr	1994	None	NSPS Subpart Dc 40 CFR 60.48c(a) 40 CFR 60.48c(g) 40 CFR 60.48c(i)	The unit commenced construction after June 9, 1989 and is less than 100 MMBtu/hr heat capacity but greater than 10 MMBtu/hr. Because the unit is fired by natural gas, only monitoring and recordkeeping requirements apply.

Unit ID	Start-up date	Control Equipment	Applicable Regulations	Verification
Standby boiler 20 MMBtu/hr	1993	None	**NSPS Subpart Dc** **40 CFR 60.48c(a)** **40 CFR 60.48c(g)** **40 CFR 60.48c(i)**	**The units commenced construction after June 9, 1989 and are less than 100 MMBtu/hr heat capacity but greater than 10 MMBtu/hr. Because the units are fired by natural gas, only monitoring and recordkeeping requirements apply.**
Fuel Oil Storage Tank 2006 m^3	1993	None	None	The fuel oil storage tank is subject to Subpart Kb because its capacity is greater than 40 cubic meters and it was constructed after July 23, 1984. However, 60.110b(c) exempts the tank from Subpart A and Kb because the maximum true vapor pressure is less than 3.5 kPa (0.11 kPa as shown in Section III.G). A.A.C. R18-2-710 is also not applicable because fuel oil #2 is not a petroleum liquid as defined in A.A.C. R18-2-701.21.

VI. PREVIOUS PERMITS

The sole prior air quality permit for this facility is Installation Permit 95012, issued on October 24, 1991. It was challenged before the Arizona State Air Pollution Control Hearing Board and resolved on March 20, 1992. This determination amended Attachment "C" to include emissions from the duct burner. In addition, a minor revision to the installation permit was issued on September 15, 1995.

Installation Permit #95012

YCA submitted an installation permit application on April 26, 1991 for the following equipment:

One GE Frame 6 dual fuel combustion gas turbine generator;
One heat recovery steam generator (HRSG);
One condensing steam turbine generator and cooling tower;
Two standby boilers; and
Emergency back-up generator.

A guarantee from the manufacturer was used to calculate emissions for the gas turbine, as shown in Section III. The other calculations were performed using emission factors from AP-42. The application included conditions that enforce YCA's status as a synthetic minor for PSD purposes. These conditions include (among other things) emission limits and limits on hours of operation depending on the type of fuel being fired.

The following is a list of requirements from the installation permit and a discussion of the basis for their inclusion or exclusion with regards to the Title V permit.

Attachment A

All of the requirements in Attachment A have been included in the Title V permit in the form of a new Attachment A, which was written for the new Title V permits and includes more comprehensive and complete requirements.

Attachment B

Section I. Applicable Rules - The requirements listed include R18-2-510, 519, 524, 801.1, and 801.36. However, these rule numbers have been updated since issuance of the permit. The corrected applicable requirements are R18-2-901.1, 901.5, 901.38, 710 and 719. An updated list of applicable requirements is included in Attachment D of the Title V permit. The requirements from A.A.C. R18-2-710 and -719 are not applicable and have not been included in the Title V permit.

Section II.A Emission Limits - The following emission limits were imposed on the GE Frame 6 turbine for NO_x, Particulates, and Sulfur Dioxide:

NO_x - 25 ppm (percent by volume @ 15% oxygen on a dry basis, gas turbine only)
PM - Process Weight Rate equation from A.A.C. R18-2-719
SOx - 1.0 lb/MMBtu

The NO_x requirement of 25 ppm is obtained from the manufacturer's guarantee submitted in the installation permit application. When the NO_x emission limit is calculated using the turbine rated heat input as described in 40 CFR 60.332(a)(1), the emission limit is calculated to be 98 ppm. Therefore, the guaranteed limit is more stringent and will be retained as the limit in the Title V permit. In addition, YCA has complied with this limit since the issuance of IP #95012. The Title V permit additionally includes the requirement that NO_x emissions from the turbine and duct burner remain below 230 tpy, based on a 12-month rolling total.

The particulate matter emission limit is based on the process weight rate equation from A.A.C. R18-2-719. The turbine is subject to 40 CFR 60, Subpart GG, therefore, regulations for existing sources do not apply. ADEQ is hereby removing this limitation from the Title V permit conditions.

It is not clear where the sulfur dioxide limit of 1.0 lb/MMBtu was obtained from. YCA will be required to burn natural gas which contains less than 0.8% by weight of sulfur dioxide and fuel oil with less than 0.05% sulfur. Because the emission limits for SOx included in the Title V permit are more stringent than the 1.0 lb/MMBtu limit, ADEQ is hereby removing this limitation from the Title V permit conditions.

Section II.B Emission Limits - An opacity limitation of 15% when firing natural gas and 20% when firing fuel oil was included in the installation permit. This limitation was included in the permit based on existing source standards. The turbine is subject to 40 CFR 60, Subpart GG, therefore; regulations for existing sources do not apply. ADEQ is hereby removing this limitation from the Title V permit conditions.

Section II.C Emission Limits - This section refers to emission limits for VOC, NO_x, SO2, PM, and CO defined in Attachment "C" of the installation permit. These limitations are based on hours of operation of the equipment. These emission limits conflicted with the hourly limitations also included in Attachment "C". ADEQ has decided that the hourly limits will be removed since the 230 tpy emission limit for NO_x from the turbine and duct burner will be met by using CEM's to determine NO_x emissions. Please see additional discussion under Attachment "C".

Section II.D Excess Emissions - The definitions of excess emissions are included in the Title V permit with the exception of the emission limit for opacity, which was omitted because there is no limit for opacity in the Title V permit. This section also included language which states that excess emissions indicated by CEM shall be considered violations of the applicable emission limits for the purposes of this permit. That language has also been included in Attachment B, Section I.A.3.d(1)(b) of the Title V permit.

Section III. Stack Sampling Facilities - Provisions for stack sampling are included in the Title V permit in Attachment "A", Section XVIII.C.

Section IV. Performance Tests - Provisions for performance tests are included in the Title V permit in Attachment "A", Section XVIII. The initial compliance test was completed on July 7, 1994 and the CEM certification tests were completed on August 4, 1994. Both test reports show emissions have been maintained within the limits of the installation permit. There are no performance tests required in the proposed Title V permit. The CEMs are "compliance" monitors, and excess emissions indicated by the CEM system are considered violations. For this reason, the performance tests at four loads from Subpart GG are not required, as per our conversation of 1/27/99 with Steve Frey of EPA Region 9. He stated that it has been the policy of the EPA to provide exemptions from performance testing at four loads if the source has continuous emission monitors. Additionally, the CEM system is quality assured, and is required to undergo annual RATA tests.

Section V. Continuous Monitoring System - The continuous monitoring requirements are included in the Title V permit in Attachment "B", Section I.A.3.b, with the exception of V.B and D. These requirements are not included because they refer to the initial startup of the CEMS, which were installed in 1994. Also not included is V.C.2, requiring excess emission reports when the duct burner is not in operation, because this requirement is redundant.

Section VI. Fuel Type - The fuel type requirements for the GE Frame 6 turbine, duct burner and the standby boilers are included in the Title V permit in Attachment "B", Sections I.C.1, II.B.1 and III.A.1; respectively.

Section VII. Fuel Amount and Recordkeeping - This requirement limits the amount of natural gas burned in the GE Frame 6 turbine and standby boilers during the calendar year. It also limits the amount of fuel oil consumed in the turbine during the calendar year. Because these amounts are the maximum that the source could consume at the maximum operating hours permitted, it is redundant to include these requirements. ADEQ is hereby removing these limits from the Title V permit.

Section VIII. Fuel Analysis - The fuel analysis requirements for the GE Frame 6 turbine are

included in the Title V permit in Attachment "B", Section I.B.1. The requirements for the standby generator have been removed, as it was never installed.

Section IX.A Other Conditions - This section required an hour meter be attached to the generator and also imposed an hours limit on the generator. The standby generator was never installed, therefore the requirements have been removed.

Section IX.B Other Conditions - This section imposes an hours limitation on the gas turbine of 7680 hours per year while firing natural gas, unless the hours of operation on fuel oil are reduced by the same amount. ADEQ is hereby removing the hourly limit from the Title V permit, the new requirements are related to emissions rather than operating hours.

Section IX.C Other Conditions - This section imposes an hours limitation on the standby boilers of 360 hours per year, unless the hours of operation of the turbine generator is reduced from 8400 hours, on an hour for hour basis. This requirement is not included in the Title V permit since the permittee now tracks emissions rather than hours.

Section X. Air Pollution Control Equipment - This section requires YCA to continuously operate and maintain a massive steam injection system to reduce nitrogen oxides emissions from the turbine exhaust. This requirement is included in the Title V permit in Attachment "B", Section I.A.2.

Attachment C

The hourly limits specified for GE Frame 6 Turbine and Duct Burner in Attachment "C" are being removed from the Title V permit because they conflict with the emission limits provided in the same attachment. For example, there is an hours limitation on the gas turbine firing natural gas of 7680 hours/year. The emission limit of 184.32 tons/year corresponds to that number of hours, as shown in Section III. However, Condition IX.B of Attachment "B" allows an increase beyond 7680 hours per year, as long as the hours of operation firing fuel oil is reduced by the same amount. Emissions from the turbine operating beyond 7680 hours would exceed the emission limit in Attachment "C". For this reason, the hourly limits of Attachment "C" are being removed from the Title V permit and, as demonstrated below, this source will not exceed 250 ton/year of a regulated pollutant. Therefore, ADEQ is hereby removing all the hourly limits from the Title V permit.

New Requirements - Section IV

In order to enhance operational flexibility at YCA and still ensure emissions of NO_x under 245 tons per year - to avoid PSD analysis, the hours limitations on the different pieces of equipment have been replaced with emission calculations on a twelve-month rolling total basis. The second boiler and the standby generator were never purchased, so the emissions from those two units no longer have to be accounted for. The three emission units at the facility, allowed to operate under the Title V permit, are the gas turbine, the duct burner and the standby boiler. A CEM on the stack exit measures emissions from the duct burner and gas turbine. The maximum PTE of NO_x from the standby boiler is 12.3 tons per year. By subtracting these emissions from the maximum, the remaining units may emit up to 230 tons per year to remain

below 245 tons per year. As long as the emissions measured by the CEM remain below 230 tons per year, the source will not be major for PSD purposes. In addition, the source has the requirement to meet the 25 ppm limit out of the GE turbine stack. From emission calculations in section III above, it was shown that the worst case PTE is 210 tons per year based on the limit of 25 ppm. This does not account for start-up (when the 25 ppm limit is not applicable), therefore the permittee is also required to track emissions of NO_x on a twelve month rolling total basis.

VII. EMISSION LIMITS AND PERIODIC MONITORING

A. GE Frame 6 Turbine

NO_x: The unit is subject to the NO_x standard of 40 CFR 60.332(a)(1). The emission limit calculated by the equation is 98 ppm. However, the unit will be limited to the guaranteed performance emission limit provided by the manufacturer to remain a synthetic minor for purposes of PSD. This limit is 25 parts per million, at 15% oxygen. This limit will comply with the standard.

Monitoring requirements include reporting on a semi-annual basis the amount of NO_x emissions in tons per year (on a twelve month rolling total basis) and the amount of fuel fired. This condition will insure that NO_x emissions are below 230 tpy.

SOx: The unit would typically be subject to the SOx standard of 40 CFR 60.333(b). This restricts the fuel to one which contains sulfur less than 0.8 percent by weight. However, the installation permit condition restricts the fuel to one which contains sulfur less than 0.05 percent by weight. The guaranteed performance emissions provided to YCA from General Electric for sulfur dioxide are based on a fuel oil sulfur content of 0.05% by weight. This limit will comply with the standard.

Monitoring for the sulfur content requirement includes maintaining the contractual agreement with the vendor limiting the sulfur content of the fuel. In addition, the Permittee must notify the Director within 30 days of any changes to the contractual agreement.

Fuel Limitation: The installation permit allows only natural gas and fuel oil to be burned in the turbine.

B. Duct Burner

The NSPS standards of 40 CFR 60 Subpart Dc apply to this duct burner, because the heat rate of 45 MMBtu/hr is greater than 10 MMBtu/hr but less than 100 MMBtu/hr, and the burner was installed after June 9, 1989. Because the burner burns only natural gas, the only applicable requirements from 40 CFR 60 Subpart Dc are related to recordkeeping and reporting, 40 CFR 60.48c(a), 60.48c(g), and 60.48(i).

NO_x: The emission limits for NO_x are part of the overall limit of 230 tons per year for the entire facility. The hours of operation of the duct burner may be chosen by the source, as long as the overall emissions remain below 230 tons per year. Also,

emissions measured by the CEM include those from the duct burner as the duct burner vents through the same stack as the turbine.

Monitoring requirements include maintaining a record of the monthly natural gas bills. In addition, a requirement to submit semi-annual reports which include the amount of NO_x emissions in tons per year.

C. Standby Boiler

Fuel Limitation: The installation permit restricts only natural gas to be burned in the standby boiler.

Hours Limitation: YCA is permitted to operate one 20 MMBtu/hr boiler. The hours limits have been removed, as described above. The NSPS standards of 40 CFR 60 Subpart Dc apply to these boilers, because the heat rate of 20 MMBtu/hr is greater than 10 MMBtu/hr but less than 100 MMBtu/hr, and the boilers were installed after June 9, 1989. Because the boilers burn only natural gas, the only applicable requirements from 40 CFR 60 Subpart Dc are related to recordkeeping and reporting, 40 CFR 60.48c(a), 60.48c(g), and 60.48(i).

Monitoring requirements are to maintain a record of the monthly natural gas bills. There are no other monitoring requirements, since the hours have been maximized to account for NO_x emissions and that amount (12.3 tpy PTE) removed from the allowable for the entire facility.

VIII. CONTINUOUS EMISSIONS MONITORS (CEMS)

The CEMs at YCA are considered "compliance CEMs" in accordance with the installation permit. Therefore, excess emissions indicated by the CEM system shall be considered violations of the applicable emission limit.

All of the installation permit requirements have been included in the Title V permit. These include:

A. Maintain, calibrate, and operate a continuous monitoring system for NO_x, fuel use, air flow, and steam to fuel ratio (Section I.A.3.b),

B. Provisions for the reporting of excess emissions (Section I.A.3.d(2)),

C. Annual RATA tests (Section I.A.3.e),

D. Recordkeeping requirements (Section I.A.3.b(1)), and

E. Definitions of excess emissions (Section I.A.3.d(1)).

IX. ADDITIONAL ISSUES

A. Gas Turbine Startup

YCA, in a supplement to their Title V application, identified a problem with their permitted emission limit for NO_x during gas turbine startup. The emission limit is 25 ppm for a three hour rolling average. The HRSG provides steam to a massive steam injection system to achieve this low concentration. However, steam cannot be injected into the turbine until the pressure in the HRSG exceeds that of the turbine combustor. This process typically takes approximately two to three hours after startup. As a result, NO_x emissions for the first three hours after startup are above the emission limit, and the unit has to inject steam at an excessive rate to try to reduce the average below the limit. This excessive steam injection rate degrades the internal combustion components of the gas turbine. This startup operation occurs six to ten times per month.

To alleviate this excess emission problem, YCA proposed to change the averaging period to a 24 hour rolling average, rather than a three hour average. However, in a meeting June 16, 1998, between ADEQ and representatives of YCA, it was discussed that under 60.8(c), excess emissions during periods of startup, shutdown, or malfunction are not considered a violation of the applicable emission limit. Consequently, ADEQ and YCA agreed that a revision to the averaging time was not necessary.

B. Hours Limitation of standby boiler

Currently, YCA is limited in their IP permit to 360 hours of operation for each standby boiler. Due to lower demand for power from their customers, there has been an increase in down time for the gas turbine. This creates a higher demand for the standby boiler. YCA proposes to increase the hours of operation from 360 hours per year to 8760 hours per year. This was incorporated into the Title V permit - there are no longer any hours limits on the boiler, and the NO_x emissions have been accounted for as described above.

X. INSIGNIFICANT ACTIVITIES

The following activities were proposed to be insignificant in the permit application.

S. No.	Activity	Determination	Comment
1	Piping of natural gas	Yes	No applicable requirement
2	Water treatment and cooling systems for process water	Yes	No applicable requirement
3	Storage of sodium hydroxide (50%)	Yes	No applicable requirement

S. No.	Activity	Determination	Comment
4	Storage of sulfuric acid (93)	Yes	No applicable requirement
5	Storage of sodium hypochlorite	Yes	No applicable requirement
6	Storage of Nalco 8103 coagulant (Polyquaternary Amine)	Yes	No applicable requirement
7	Storage of Nalco 356 Corrosion Inhibitor (Cychlohexylamine & Morpholine)	Yes	No applicable requirement
8	Storage of Nalco 7208 feed water treatment (NaOH & TSP)	Yes	No applicable requirement
9	Storage of Nalco 7210 feed water treatment (TSP)	No longer used	N/A
10	Eliminox oxygen scavenger (modified amino compounds)	Yes	No applicable requirement
11	Nalco 1336 sodium tolytriazol	No longer used	N/A
12	Nalco Dynacool 1383 T scale inhibitor (sodium phosphonate and polyacrylate)	No longer used	N/A
13	Nalco Transport-Plus 2802 (Aqueous solution of acrylamid/sodium acrylate resin, cyclohexylamine & sodium bisulfite)	No longer used	N/A
14	Nalco 7330 microbiocide -5-chloro-2-methyl-4-isothiazolin-3-one -2-methyl-4-isothiazolin-3-one	Yes	No applicable requirement
15	Nalco9 Acti-Brom 1338 biodispersant (bromide salt & oxylakylate)	No longer used	N/A
16	Nalco 2549 Pulv oxygen scavenger (sodium sulfite)	No longer used	N/A
17	General office activities and maintenance	Yes	No applicable requirement
18	Restroom facilities and associated cleanup operations	Yes	A.A.C. R18-2-101.54a
19	Air conditioning in office	Yes	No applicable requirement

S. No.	Activity	Determination	Comment
20	Maintenance and repair of emission units and equipment	Yes	No applicable requirement
21	Circuit breakers	Yes	No applicable requirement
22	IC engine driven fire water pumps for emergency service	Yes	A.A.C. R18-2-101.54h
23	Garratt-Callahan Formula 2022 (zinc phosphate)	Yes	No applicable requirement
24	Garratt-Callahan Formula 647 (sodium hexametaphosphate)	Yes	No applicable requirement
25	Nalco N-1801 (corrosion inhibitor)	Yes	No applicable requirement
26	Nalco Stabrex ST70 (stabilized bromine bleach)	Yes	No applicable requirement
27	Nalco 39-M (corrosion inhibitor)	Yes	No applicable requirement